

FileViewEditToolsWindowHelp

Active

L1: (0) tele adj medincine

L2: (94) tele adj medicine

L3: (20867) camera\$3 same remot\$5

L4: (6) 2 and 3

L5: (1789) wireless\$3 same medical\$3 same (instrument or device\$3)

L6: (331) wireless\$3 same medical\$3 same (instrument or device\$3) same (camera\$3 or sensor\$3)

L7: (45) wireless\$3 same medical\$3 same (instrument or device\$3) same (camera\$3 or sensor\$3) sam...

L8: (774) (portable\$3 or wireless\$3 or PDA\$3) same medical\$3 same (instrument or device\$3) sam...

L9: (804) (portable\$3 or wireless\$3 or PDA\$3) same medical\$3 same (instrument\$6 or device\$3) s...

L10: (13) (portable\$3 or wireless\$3 or PDA\$3) same medical\$3 same (instrument\$6 or device\$3) s...

L11: (11471) mobile\$3 same camera\$3

L12: (112) 9 and 11

L13: (804) (portable\$3 or wireless\$3 or PDA\$3 or wareable\$3) same medical\$3 same (instrument\$6...

L14: (137493) (central\$3 or remot\$3) same (station\$3 or clinic or hospital or doctor)

L15: (52) 11 and 13 and 14

L16: (65) 13 same 14

Failed

(0) 36 with 43

Saved

(1333) (detect\$3 or determin\$3) same motion\$3 same chang\$3 same threshold\$3

(1108) (pan\$3 or tilt\$3) same camera\$3 same (encod\$3 or compress\$4)

(10) ((detect\$3 or determin\$3) same motion\$3 same chang\$3 same threshold\$3) and ((pan\$3 or tilt\$...

(23748) (detect\$3 or determin\$3) same motion\$3 same chang\$3

(263992) compar\$3 same (predetermined or threshold\$3)

(45) ((pan\$3 or tilt\$3) same camera\$3 same (encod\$3 or compress\$4)) and ((detect\$3 or determin\$3...

(100906) (detect\$3 or determin\$3) same (mov\$3 or motion\$3) same chang\$3

(2215) (compar\$3 same (predetermined or threshold\$3)) same ((detect\$3 or determin\$3) same (mov\$3...

Search

DBs

USPAT, US-PGFI

Plurals

Default operator: OR

Highlight all hit terms initially

13 same 14

BRS form

IS&R form

Image

Text

HTML

	U	1	Document I	Issue Da	Page	Title	Current O	Current XR	Retrieval	Inventor	S	C	P	2	3	4	5	6	7	8	9	0
1	<input type="checkbox"/>	<input type="checkbox"/>	US	20040617	16	Tele-robotic system used to	700/245			Wang, Yulun et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20040527	26	Healthcare monitoring	340/539.12	340/573.1;		Lye, Jason et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	<input type="checkbox"/>	<input type="checkbox"/>	US	20040415	13	Child care telehealth access	705/2	600/300		McConnochie,	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	<input type="checkbox"/>	<input type="checkbox"/>	US	20040415	25	Healthcare monitoring	600/300			McConnochie,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Ready

NUM

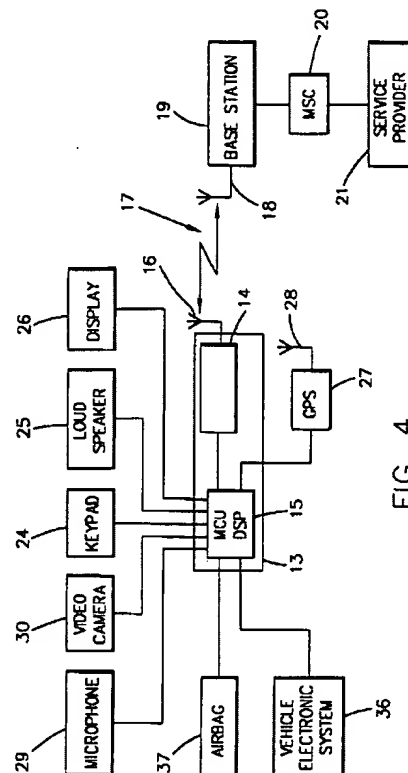
US-PAT-NO: 6519241
DOCUMENT-IDENTIFIER: US 6519241 B1
TITLE: Mobile telephone for

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Detailed Description Text - DETX (14):

The mobile telephone 13 is also coupled v electronic system 23. This medical electron measuring sensor for determining the glucose diabetes or some other metabolic illness whi

Details Text Image HTML KWIC



	Document I	Kind Code	Source	Issue D	Pages
82	US 6760262		USPAT	2004070	65
83	US 6739511		USPAT	2004052	607
84	US 6697103		USPAT	2004022	20
85	US 6690268		USPAT	2004021	201
86	US 6680792		USPAT	2004012	40
87	US 6556465		USPAT	2003042	65
88	US 6549456		USPAT	2003041	66
89	US 6519241		USPAT	2003021	10
90	US 6514296		USPAT	2003020	37
91	US 6383136		USPAT	2002050	7
92	US 6370075		USPAT	2002040	66
93	US 6208542		USPAT	2001032	21
94	US 6206480		USPAT	2001032	18
95	US 6185119		USPAT	2001020	66
96	US 6184726		USPAT	2001020	66
97	US 6080989		USPAT	2000062	12
98	US 5980977		USPAT	1999110	71
99	US 5867363		USPAT	1999020	35

Details Text Image HTML

Details Text Image HTML Full

US-PAT-NO: 6454708

DOCUMENT-IDENTIFIER: US 6454708 B1

TITLE: Portable remote patient memory card or smart card

----- KWIC -----

Abstract Text - ABTX (1):

A system and method for monitoring health from a subject. The system is characterized by a

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Pages
29	US 2001004		US-PGP	2001112	12
30	US 2001003		US-PGP	2001102	27
31	US 2001002		US-PGP	2001092	25
32	US 6694180		USPAT	2004021	15
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8

Details Text Image HTML Full



US006454708B1

(12) United States Patent
Ferguson et al.

(10) Patent No.: US 6,454,708 B1
(45) Date of Patent: Sep. 24, 2002

(34) PORTABLE REMOTE PATIENT
TELEMONITORING SYSTEM USING A
MEMORY CARD OR SMART CARD

IEEE Engineering in Medicine and Biology Society, The
Boston Plaza Hotel, Boston, MA, Nov. 13-16, 1997, vol. 3
of 4, 2 pages.

(75) Inventors: Peter Ferguson, Cambridge (GB);
Margaret Kummer, Cambridge (GB);
Graham Lay, Wilberton (GB); Mike
Llewellyn, Epsom (GB); John D. Place,
Bury St. Edmunds (GB)

(List continued on next page.)
Primary Examiner—Eric F. Winkler
Assistant Examiner—David McCroskey
(74) Attorney, Agent, or Firm—Woodcock Washburn LLP

(73) Assignee: Nexan Limited, Cambridge (GB)

(57) ABSTRACT

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 118 days.

A system and method for monitoring health parameters and capturing data from a subject. The system is characterized by a continuous, disposable sensor band with sensors for measuring full waveform ECG, full waveform respiration, skin temperature, and motion, and a connector which accepts a memory card or a smart card for storage of the measured data. After a predetermined period of time, such as when the sensor band is removed, the memory card or smart card is removed and inserted into a monitoring device which reads the stored health parameter data of the subject. The monitoring device includes a base station that includes a memory/smart card reader and is connected to conventional phone lines for transferring the collected data to a remote monitoring station. The base station may also capture additional clinical data, such as blood pressure data, and to perform data checks. Subject safety is enhanced by the ability of the base station to compare clinical data, e.g. ECG, against given profiles and to check events when appropriate or when the base station is programmed to do so. This remote monitoring station allows the presentation and review of data (including events) forwarded by the sensor band. ECG analysis software and a user-friendly graphical user interface are provided to remotely analyze the transmitted data and to permit system maintenance and upkeep. In alternative embodiments, a smart card includes the sensor band's electronics and/or signal transmission circuitry in conjunction with a portable data logger so that the electronics may be reused from one disposable sensor band to the next without limiting the patient's range of movement. The system of the invention has useful application to the collection of subject clinical data during drug trials and medical testing for regulatory approvals as well as management of subjects with chronic diseases.

(21) Appl. No.: 09/991,397

(22) Filed: Jun. 9, 2000

Related U.S. Application Data

(53) Continuation-in-part of application No. 09/292,405, filed on
Apr. 15, 1999.

(51) Int. Cl. 7 A61B 5/00

(52) U.S. Cl. 600/300; 128/503; 128/904

(58) Field of Search 600/300, 393, 508, 509; 128/503, 504;
705/1, 2, 3; 607/77

(56) References Cited

U.S. PATENT DOCUMENTS

2,704,125 A 10/1442 Herman 128/2.1

2,660,165 A 11/1913 Miller 128/2.06

(List continued on next page.)

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GB 253540 12/1953

DE 195 36 204 A1 1/1997

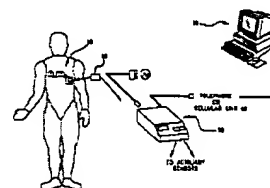
EP 0 212 278 3/1997

(List continued on next page.)

OTHER PUBLICATIONS

"Microcomputer-based Telemetry System for ECG Monitoring," Proceedings of the Ninth Annual Conference of the

78 Claims, 21 Drawing Sheets



US-PAT-NO: 6442430

DOCUMENT-IDENTIFIER: US 6442430 B1

TITLE: Implantable medical device and methods of use

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Detailed Description Text - DETX (47):

Embodiments that utilize video camera 626 physician to program the IMD while being monitored stationed at a remote location. For instance,

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	Document I	Kind Code	Source	Issue D	Pages
29	US 2001004		US-PGP	2001112	12
30	US 2001003		US-PGP	2001102	27
31	US 2001002		US-PGP	2001092	25
32	US 6694180		USPAT	2004021	15
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8

United States Patent Ferek-Petric

(10) Patent No.: US 6,442,430 B1
(45) Date of Patent: Aug. 27, 2002

(54) IMPLANTABLE MEDICAL DEVICE PROGRAMMERS HAVING HEADSET VIDEO AND METHODS OF USING SAME

FOREIGN PATENT DOCUMENTS

WO WO02/18198 10/1992

OTHER PUBLICATIONS

Auracher et al., "Automatic Tachycardia Recognition", *PACE*, 541-547 (May-Jun. 1984).
Olsen et al., "IEEE Computer Society Press", *Computers in Cardiology*, 157-170 (Oct. 7-10, 1986).

Primary Examiner—Scott M. Getzow
(74) Attorney, Agent, or Firm—Thomas F. Woods, Eric R. Wulfsberger, Thomas G. Berry

(57) ABSTRACT

Programmers, systems and methods utilizing body-wearable components, such as a head-mounted video display apparatus, are provided to program implantable medical devices (IMDs). The head-mounted video display apparatus provides information regarding programming parameters as well as information regarding the patient and/or the IMD. By being worn on the body, programmers of the present invention are highly portable. Further, by providing a head-mounted video display apparatus, programmers of the present invention provide a display that remains viewable even in crowded environments.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/727,463

(22) Filed: Dec. 4, 2000

(51) Int. Cl. A61N 1/37

(52) U.S. Cl. 607/33

(56) Field of Search 607/30, 31, 32, 607/60

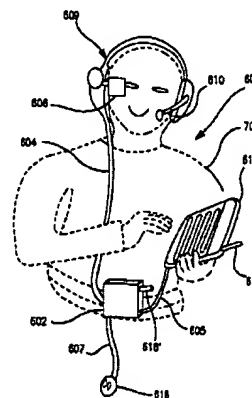
(56) References Cited

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4,315,472 A 2/1982 Minowski et al.
4,375,817 A 3/1983 Eagle et al.
4,379,459 A 4/1983 Sahn

(List continued on next page.)

35 Claims, 8 Drawing Sheets



US-PAT-NO: 6292698

DOCUMENT-IDENTIFIER: US 6292698 B1
See image for Certificate of CorrectionTITLE: World wide patient loc
for implantable medica

----- KWIC -----

Detailed Description Text - DETX (34):

As described above, implantable devices s
telemetry transceivers with range suitable f

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	Document	I	Kind	Code	Source	Issue	D	Pages
30	US 2001003				US-PGP	2001102		27
31	US 2001002				US-PGP	2001092		25
32	US 6694180				USPAT	2004021		15
33	US 6693516				USPAT	2004021		25
34	US 6687523				USPAT	2004020		30
35	US 6680792				USPAT	2004012		40
36	US 6642844				USPAT	2003110		8
37	US 6641533				USPAT	2003110		33
38	US 6626902				USPAT	2003093		15
39	US 6589170				USPAT	2003070		27
40	US 6558320				USPAT	2003050		19
41	US 6544174				USPAT	2003040		40
42	US 6491647				USPAT	2002121		41
43	US 6454708				USPAT	2002092		42
44	US 6445284				USPAT	2002090		26
45	US 6442430				USPAT	2002082		18
46	US 6415792				USPAT	2002070		8
47	US 6292698				USPAT	2001091		17

Details Text Image HTML



US006292698B1

(12) United States Patent
Duffin et al.(10) Patent No.: US 6,292,698 B1
(45) Date of Patent: Sep. 18, 2001(54) WORLD WIDE PATIENT LOCATION AND
DATA TELEMETRY SYSTEM FOR
IMPLANTABLE MEDICAL DEVICES(72) Inventors: Edwin G. Duffin, New Brighton; David
L. Thompson, Fridley; Steven D.
Goedele, Forest Lake; Gregory J.
Hauwrich, Champlin, all of MN (US)(73) Assignee: Medtronic, Inc., Minneapolis, MN
(US)(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/043,375

(22) Filed: Mar. 26, 1998

Related U.S. Application Data

(63) Continuation of application No. 08/494,218, filed on Jan.
23, 1995, now Pat. No. 5,723,374.

(51) Int. Cl. A61N 1/37

(52) U.S. Cl. 607/32

(53) Field of Search 607/32, 60; 128/504,
128/505

References Cited

U.S. PATENT DOCUMENTS

5,344,661 * 8/1995 Davis et al. 125/904

5,625,680 * 3/1997 Shachowitz et al. 607/32

* cited by examiner

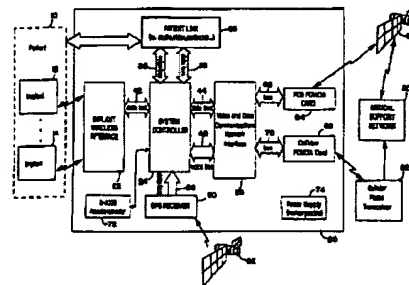
Primary Examiner—Scott M. Getzow

(74) Attorney, Agent, or Firm—Michael B. Adles; Harold
R. Patten

(57) ABSTRACT

A system for communicating with a medical device implanted in an ambulatory patient and for locating the patient in order to selectively monitor device function, alter device operating parameters and modes and provide emergency assistance to and communications with a patient. The implanted device includes a telemetry transceiver for communicating data and operating instructions between the implanted device and an external patient communications control device that is either worn by or located in proximity to the patient within the implanted device transceiving range. The control device preferably includes a communication link with a remote medical support network, a global positioning satellite receiver for receiving positioning data identifying the global position of the control device, and a patient activated link for permitting patient initiated personal communication with the medical support network. A system controller in the control device controls data and voice communications for selectively transmitting patient initiated personal communications and global positioning data to the medical support network, for initiating telemetry out of data and operating commands from the implanted device and transmission of the same to the medical support network, and for receiving and initiating re-programming of the implanted device operating modes and parameters in response to instructions received from the medical support network. The communications link between the medical support network and the patient communications control device may comprise a world wide satellite network, hard-wired telephone network, a cellular telephone network or other personal communications system.

25 Claims, 6 Drawing Sheets



Details Text Image HTML Full

US-PAT-NO: 6213942

DOCUMENT-IDENTIFIER: US 6213942 B1

TITLE: Telemeter design and
telemetry system

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Brief Summary Text - BSTX (6):
Remote telemeters of medical telemetry sy

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	Document I	Kind Code	Source	Issue D	Pages
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25

Details Text Image HTML



US066213942B1

(12) United States Patent
Flach et al.

(10) Patent No.: US 6,213,942 B1
(45) Date of Patent: Apr. 10, 2001

(54) TELEMETRY DESIGN AND DATA
TRANSFER METHODS FOR MEDICAL
TELEMETRY SYSTEM

(57) Inventors: Terry E. Flach, Alhambra; Michael D.
Stoop, Aliso Viejo, both of CA (US)

(73) Assignee: Vitacom, Inc., Tustin, CA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/513,254

(22) Filed: May 26, 1999

Related U.S. Application Data

(52) Division of application No. 08/975,394, filed on Jan. 3, 1994,
now Pat. No. 5,844,639.

(50) Provisional application No. 60/006,800, filed on Nov. 13,
1993.

(51) Int. Cl. A61B 5/00; A61F 2/02

(52) U.S. Cl. 600/300; 600/301; 128/903;
128/904

(58) Field of Search 600/300, 301,
600/481, 345, 347, 500, 529, 544-545,
555; 128/900, 903, 904, 905; 709/2, 3

(56) References Cited

U.S. PATENT DOCUMENTS

3,603,881 6/1971 Thoresen
3,829,868 7/1974 Rogers
5,021,782 12/1975 Hollinger et al.
6,051,522 6/1977 Healy et al.

(List continued on next page.)

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05/02459 6/1994 (EP)
07/10465 5/1996 (EP)
2238060 2/1993 (GB)
2271691 4/1994 (GB)

OTHER PUBLICATIONS

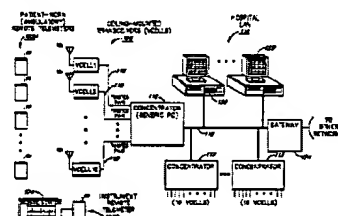
Product brochure titled "Wireless Connectivity by Pacific
Communications, Inc.", 1993.
International Search Report, dated Oct.

Primary Examiner—Cary O'Connor
Assistant Examiner—Michael Astorino
(74) Attorneys, Agent, or Firm—Knobbe, Martens, Olson &
Bear, LLP

(57) ABSTRACT

A medical telemetry system is provided for collecting the
real-time physiologic data of patients (including ambulatory
patients) of a medical facility, and for transferring the data
via RF to a real-time data distribution network for monitor-
ing and display. The system includes battery-powered
remote telemeters which attach to responsive patients, and
which collect and transmit (in data packets) the physiologic
data of the patients. The remote telemeters communicate
bi-directionally with a number of ceiling-mounted RF
transceivers, referred to as "VCELLs," using a wireless
TDMA protocol. The VCELLs, which are hardwire-
connected to a LAN, forward the data packets received from
the telemeters to patient monitoring stations on the LAN. The
VCELLs are distributed throughout the medical facility
such that different VCELLs provide coverage for different
patient areas. As part of the wireless TDMA protocol, the
remote telemeters continuously assess the quality of the RF
links offered by different nearby VCELLs (by scanning the
frequencies on which different VCELLs operate), and con-
nect to those VCELLs which offer the best link conditions.
To provide a high degree of protection against multi-path
interference, each remote telemeter maintains communication
with two different VCELLs at a time, and transmits all data
packets (on different frequencies and during different
time slots) to both VCELLs; the system thereby provides
space, time and frequency diversity on wireless data packet
transfers from the telemeters. The telemeters and VCELLs
also implement a patient location protocol for enabling the
monitoring of the locations of individual patients. The
system can accommodate a large number of patients
(e.g., 500 or more) while operating within the transmission
power limits of the VHF medical telemetry band.

24 Claims, 11 Drawing Sheets



Details Text Image HTML Full

US-PAT-NO: 6083156

DOCUMENT-IDENTIFIER: US 6083156 A

TITLE: Portable integrated p

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Brief Summary Text - BSTX (15):

Other physiological monitoring systems de
5,375,604 (1994) and 5,417,222 (1995) are ei
systems
for monitoring only (i.e. not intended to pe

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Page
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25
51	US 6171264		USPAT	2001010	7
52	US 6083248		USPAT	2000070	25
53	US 6083156		USPAT	2000070	11

Details Text Image HTML

United States Patent [19]
Lisbeck

[11] Patent Number: 6,083,156
[45] Date of Patent: Jul. 4, 2000

[54] PORTABLE INTEGRATED PHYSIOLOGICAL
MONITORING SYSTEM

[75] Inventor: Ronald S. Lisbeck, 615 E. Yale Ave.
#C, Salt Lake City, Utah 84105-1330

[73] Assignee: Ronald S. Lisbeck, Salt Lake City,
Utah

[21] Appl. No.: 08/192,714

[22] Filed: Nov. 16, 1998

[51] Int. Cl.⁷ A61B 5/0285

[52] U.S. Cl. 600/301

[56] Field of Search 600/300, 301,
600/303, 509, 534, 544

[56] References Cited

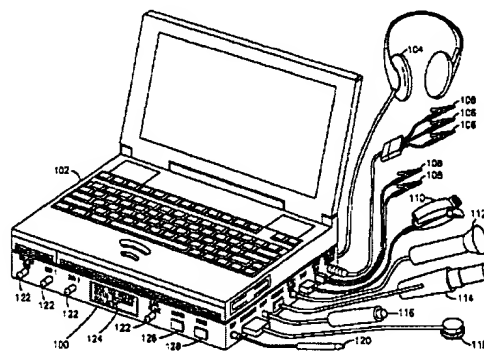
U.S. PATENT DOCUMENTS

4,666,008	8/1987	Robbins	128,670
4,827,940	5/1988	Born	128,666
4,860,729	8/1988	Kahn	128,668
4,885,111	12/1989	Seiden	128,671
4,974,607	12/1990	Mewe	128,604
5,012,411	4/1991	Pollmann	364/413.06
5,238,002	8/1993	Quinn	128,700
5,257,627	11/1993	Rapaport	128/401.07
5,263,491	1/1993	Thomson	128,774
5,275,159	1/1994	Gelshel	128,633
5,337,821	8/1994	Pollmann	128,700
5,371,608	12/1994	Kelly	128,671
5,417,222	5/1995	Dumpey	128,696

Primary Examiner: Max Hindenburg
Attorney, Agent, or Firm: Garrison M. Hobson
[37] ABSTRACT

A portable, integrated physiological monitoring system is described for use in clinical outpatient environments. This system consists of a plurality of sensors and auxiliary devices, an electronics unit (100) that interfaces to the sensors and devices, and a portable personal computer (102). Electrodes (104) are provided to acquire electrocardiographic, electroencephalographic, and electromyographic signals. Electrodes (106) are provided to stimulate neural and muscular tissue. A finger pulse oximeter (110), an M-mode ultrasonic transducer (112), an airflow sensor (114), a temperature probe (116), a patient event switch (118), and an electronic stethoscope (118) are provided. A portable personal computer (102) interfaces to the electronics unit (100) via a standard parallel printer port interface (248) to allow communication of commands and information to/from the electronics unit (100). Control and display of the information gathered from the electronics unit (100) is accomplished via an application program executing on the portable personal computer (102). Sharing of common data acquisition hardware along with preliminary processing of information gathered is accomplished within the electronics unit (100). The entire system is battery operated and portable. This system, because of its architecture, offers significant cost advantages as well as unique modes of operation that cannot be achieved from the individual physiological parameter measurement devices alone. The system allows for the integration of acquired information from the sensors into a patient's database stored on the portable personal computer.

20 Claims, 2 Drawing Sheets



Details Text Image HTML Full

data from a bedside monitor (or other instrument) as an RS-232 connection. Instrument remote telephysiologic data to the central station over a common.

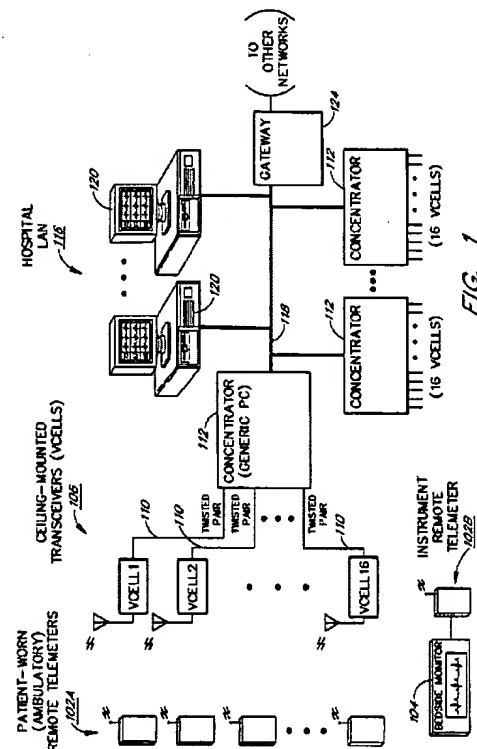
U.S. Patent

Aug. 31, 1999

Sheet 1 of 11

5,944,659

	Document I	Kind Code	Source	Issue D	Pages
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25
51	US 6171264		USPAT	2001010	7
52	US 6083248		USPAT	2000070	25
53	US 6083156		USPAT	2000070	11
54	US 6059576		USPAT	2000050	17
55	US 6014346		USPAT	2000011	16
56	US 5944659		USPAT	1999083	25



US-PAT-NO: 5752976

DOCUMENT-IDENTIFIER: US 5752976 A

TITLE: World wide patient local
for implantable medical

----- KWIC -----

Detailed Description Text - DETX (33):

As described above, implantable devices such as telemetry transceivers with range suitable for range to the implant wireless interface 22 of the mo

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	Document I	Kind Code	Source	Issue D	Pages
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25
51	US 6171264		USPAT	2001010	7
52	US 6083248		USPAT	2000070	25
53	US 6083156		USPAT	2000070	11
54	US 6059576		USPAT	2000050	17
55	US 6014346		USPAT	2000011	16
56	US 5944659		USPAT	1999083	25
57	US 5752976		USPAT	1998051	17

Details Text Image HTML Full

United States Patent [19]

Duffin et al.

US005752976A
[11] Patent Number: 5,752,976
[45] Date of Patent: May 19, 1998

[54] WORLD WIDE PATIENT LOCATION AND DATA TELEMETRY SYSTEM FOR IMPLANTABLE MEDICAL DEVICES

[75] Inventors: Edwin G. Duffin, New Brighton; David L. Thompson, Fridley; Steven D. Gondke, Forest Lake; Gregory J. Hanbrich, Champlin, all of Minn.

[73] Assignee: Medtronic, Inc., Minneapolis, Minn.

[21] Appl. No.: 094,218

[22] Filed: Jun. 23, 1996

[51] Int. Cl.⁶: A61N 1/37

[52] U.S. Cl.: 607/33

[58] Field of Search: 364913.02; 128/903; 128/904, 696; 607/33, 60

[56] References Cited

U.S. PATENT DOCUMENTS

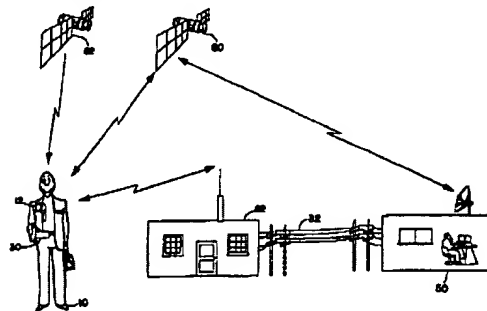
3,253,358 5/1984 Vollenweider
3,950,257 10/1973 Fiedler
3,979,320 6/1978 Kelson
4,319,241 3/1982 Mann
4,440,173 4/1984 Boudish
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4,489,331 12/1989 Edm.
4,851,441 1/1991 Sengulovic
4,987,897 1/1991 Pardo
5,056,869 8/1991 Johnson
5,113,669 5/1992 Vagstad
5,336,245 8/1994 Adams
5,381,798 1/1995 DeGruya
5,416,085 5/1995 Swenson et al.
5,417,822 5/1995 DeGruya
5,593,426 1/1997 Morgan et al.

Primary Examiner—Scott M. Gossow
Attorney, Agent, or Firm—Harold R. Petron; Michael R. Atias

[57] ABSTRACT

A system and method for communicating with a medical device implanted in an ambulatory patient and for locating the patient in order to selectively monitor device function, alter device operating parameters and modes and provide emergency assistance to and communications with a patient. The implanted device includes a telemetry transceiver for communicating data and operating instructions between the implanted device and an external patient communications control device that is either worn by or located in proximity to the patient within the implanted device transmitting range. The control device preferably includes a communication link with a remote medical support network, a global positioning satellite receiver for receiving positioning data identifying the global position of the control device, and a patient activation link for permitting patient initiated personal communications with the medical support network. A system controller in the control device controls data and voice communications for selectively transmitting patient initiated personal communications and global positioning data to the medical support network, for initiating telemetry out of data and operating commands from the implanted device and transmission of the same to the medical support network, and for receiving and initiating re-programming of the implanted device operating modes and parameters in response to instructions received from the medical support network. The communications link between the medical support network and the patient communications control device may comprise a world wide satellite network, land-based telephone network, a cellular telephone network or other personal communications system.

34 Claims, 6 Drawing Sheets



Details Text Image HTML Full

EAST - [Default EAST Workspace 1600x1200.wsp:1]

File View Edit Tools Window Help

Active

L1: (306) (identif\$5 or determin\$3) same patient\$3 same location\$3 same camera\$3

L2: (3523) mobile\$3 same (clinnic\$3 or care\$2 or hospital\$3)

L3: (5) 1 and 2

L4: (458) mobile\$3 same monitor\$3 same patient

L5: (4) 1 and 4

L6: (24) (identif\$5 or determin\$3) same patient\$3 same location\$3 same camera\$3 same remot\$3

L7: (24) mobile\$3 same monitor\$3 same patient\$3 same care same location

L8: (1) ("6301480").PN.

L9: (8792) (identif\$5 or determin\$3) same patient\$3 same location\$3

L10: (64) mobile\$3 same (clinnic\$3 or care\$2 or hospital\$3) same camera\$3

L11: (11) 9 and 10

L12: (213) mobile\$3 same (clinnic\$3 or care\$2 or hospital\$3 or medical\$3) same camera\$3

L13: (12) 9 and 12

L14: (38209) patient\$3 same location\$3

L15: (29) 12 and 14

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12 and 14

	U	1	Document I	Issue Da	Page	Title	Current O	Current XR	Retrieval	Inventor	S	C	P	2	3
1			US	20040108	27	Web-based system and	345/728	345/749		Perry, James N. et al.					
2			US	20030327	14	Telemedical method and	606/1	128/903		Wilk, Peter J.					
3			US	20030109	24	Systems and methods	455/456.1	455/459		Stern, Edith H. et al.					
4			US	20020919	19	Emergency facility	348/14.08			James, Kelvin C. et					
5			US	20020704	8	Medical system architecture	709/219	709/206		Birkhoelzer, Thomas					
6			US	20020620	12	Portable extender for data	705/1	705/2		Thompson, David L.					
7			US	20020606	18	System, method, and	704/270.1			Klinefelter, Robert					
8			US	20020516	18	Integrated network for	348/143	340/988;		Fernandez, Dennis					
9			US	20011011	18	Integrated network for	725/105			Fernandez, Dennis					
10			US	20010920	18	Integrated network for	348/143	348/61;		Fernandez, Dennis					
11			US	20010802	18	Integrated network for	348/143	348/169		Fernandez, Dennis					

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[illegible][illegible]

EAST - [Default EAST Workspace 1600x1200.wsp.1]

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L1: (982) (mobil\$5 or wireless\$3) same patient\$3 same care\$3

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L3: (14) (mobil\$5 or wireless\$3) same patient\$3 same care\$3 same camera\$3

L4: (56) (mobil\$5 or wireless\$3) same care\$3 same camera\$3

L5: (14) wireless\$3 same remot\$3 same camera\$3 same patient

L6: (862) wireless\$3 same remot\$3 same patient\$3

L7: (982) (mobil\$5 or wireless\$3) same patient\$3 same care\$3

L8: (202) 6 and 7

L9: (29) 8 and camera\$3

L10: (16) wireless\$3 same remot\$3 same patient\$3 same camera\$3

L11: (38) remot\$3 same patient\$3 same camera\$3 same care\$3

L12: (4) mobile\$3 same care\$3 same (van or truck or car or vehicle) same camera\$3

L13: (25) mobile\$3 same care\$3 same (van or truck or car or vehicle) same patient\$3

L14: (147) mobile\$3 same care\$3 same (van or truck or car or vehicle)

L15: (49) mobile\$3 same clinic\$3 same (van or truck or car or vehicle)

L16: (141) (clinic\$3 or medical\$3) same (van or truck or car or vehicle) same camera\$3

L17: (679) mobil\$5 same patient\$3 same care\$3

L18: (2234) camera\$3 same remot\$3 same network\$3

L19: (7) 17 and 18

L20: (12822) camera\$3 same network\$3

L21: (12) 17 and 20

L22: (7944) mobil\$5 same patient\$3

L23: (25) 18 and 22

L24: (1318) remot\$4 same patient\$3 same care\$3

L25: (772) camera\$3 same mobile\$3 same network\$3

L26: (4) 24 and 25

L27: (1154) mobil\$5 same patient\$3 same (care\$3 or screening\$3 or clinic\$3)

L28: (8) 18 and 27

L29: (3) mobil\$5 same patient\$3 same (care\$3 or screening\$3 or clinic\$3) same GPS\$3 same (detect...

L30: (64) mobil\$5 same patient\$3 same (care\$3 or screening\$3 or clinic\$3) same (detect...

SearchListBrowseQueue

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27 and 40

BRS...SAR...km...TestHTML

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		US 20040000630040108	21		Health care service custom	705/3	455/122.1		Matanaka, Matanaka					

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EAST - [Default EAST Workspace 1600x1200.wsp.1]

FileViewEditToolsWindowHelp

Drafts

BRS: compar\$3 same differen\$4 same threshold\$3

BRS: camera\$3

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L1: (2) detect\$3 same user\$3 same transaction\$3 same vendor\$3 same location\$3

L2: (192) detect\$3 same user\$3 same transaction\$3 same location\$3

L3: (17) detect\$3 same user\$3 same transaction\$3 same location\$3 same camera\$3

L4: (32) (detect\$3 or identif\$5 or determin\$3) same user\$3 same transaction\$3 same location\$3 sa...

L5: (42934) (detect\$3 or identif\$5 or determin\$3) same user\$3 same location\$3

L6: (516) camera\$3 same (vendor\$3 or ATM\$2) same (device or machine)

L7: (87) 5 and 6

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(69) motion same compensat\$4 same (up adj conver\$5)

(27688) compar\$3 same differen\$4 same threshold\$3

(9) (motion same compensat\$4 same (up adj conver\$5)) and (compar\$3 same differen\$4 same threshold\$3)

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BRS...BRS...BRS...TextHTML

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3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20031120	101	Automated banking	705/43			Drummond, Jay Paul	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20031030	97	Automated transaction	235/379			Graef, H. Thomas et	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20031023	97	Automated transaction	209/534			Graef, H. Thomas et	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20031009	36	Vision-based operating	382/209	382/118		DeLean, Bruno	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20031002	25	Digital watermarking	705/50	380/205;		McKinley, Tyler J. et	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20030731	8	Automatic teller system and	235/487			Brown, Michael	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20030717	39	Automated fee collection	235/381			Fulcher, Robert A. et	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20030703	92	Method of Operating a	235/379			Force, Matthew et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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5 BRS: compar\$3 same differen\$4 same threshold\$3

-5 BRS: camera\$3

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• L1: (2) detect\$3 same user\$3 same transaction\$3 same vendor\$3 same location\$3

L2: (192) detect\$3 same user\$3 same transaction\$3 same location\$3

• L3: (17) detect\$3 same user\$3 same transaction\$3 same location\$3 same camera\$3

L4: (32) (detect\$3 or identif\$5 or determin\$3) same user\$3 same transaction\$3 same location\$3 sa...

9 L5: (42934) (detect\$3 or identif\$5 or determin\$3) same user\$3 same location\$3

L6: (516) camera\$3 same (vendor\$3 or ATM\$2) same (device or machine)

L7: (87) 5 and 6

L8: (1) ("5441047").PN.

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(69) motion same compensat\$4 same (up adj conver\$5)

27688) compar\$3 same differen\$4 same threshold\$3

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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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BRS: ((compos\$4 or creat\$3 or combin\$3) with (image\$1 or picture\$1 or frame\$1)) same film\$3 same...

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BRS: compensat\$3 same

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L1: (1144) medic\$4 same (mobile or wireless\$1) same (car\$1 or van\$1 or truck\$1 or vehicle\$1)

L2: (22662) (determin\$3 or detect\$3) same (mobile or wireless\$1) same (location\$1 or position\$1)

L3: (68) 1 same 2

L4: (27) (Internet or www or web) and 3

L5: (183) 1 and 2

L6: (38413) (Internet\$1 or www\$1 or web\$3) same (mobile\$3 or wireless\$3)

L7: (90) 5 and 6

L8: (1079) medical\$4 same (mobile\$3 or wireless\$1) same (car\$1 or van\$1 or truck\$1 or vehicle\$1)

L9: (79) 2 and 6 and 8

L10: (2040) medical\$4 same (remot\$3 or mobile\$3 or wireless\$1) same (car\$1 or van\$1 or truck\$1 o...

L11: (93) 2 and 6 and 10

L12: (73) medical\$4 same (mobile\$3 or wireless\$1) same (car\$1 or van\$1 or truck\$1 or vehicle\$1)...

L13: (34) medical\$4 same (mobile\$3 or wireless\$1) same (car\$1 or van\$1 or truck\$1 or vehicle\$1)...

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(1) stich\$3 same film\$3 same scan\$4

(0) 1 and

(0) transform\$5 same (pixel\$1 near2 original\$1 near2 (image or picture or frame))) same (encod\$...

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medical\$4 same (mobile\$3 or wireless\$1) same (car\$1 or van\$1 or truck\$1 or vehicle\$1) same (determin\$3 or detect\$3) same (location\$3 or position

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1	<input type="checkbox"/>	<input type="checkbox"/>	US	20031016	NA	Wireless house server and	705/26			Strierner, Bryan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20030828	97	Movement and event	702/187			Vock, Curtis A. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US	20030821	29	Secure integrated device	713/176			Doyle, Ronald P. et	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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